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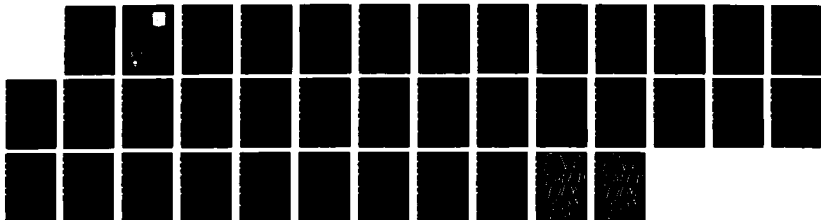
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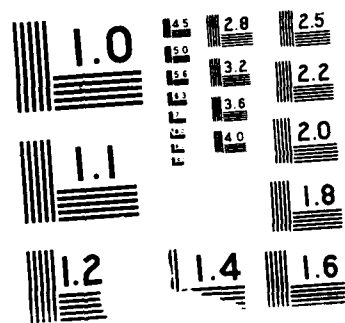
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### TACTICAL AIR FORCE NIGHT/ADVERSE WEATHER TRAINING

BY

LIEUTENANT COLONEL CHARLES E. KITTLES, USAF

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USAWC MILITARY STUDIES PROGRAM PAPER

TACTICAL AIR FORCE NIGHT/ADVERSE WEATHER TRAINING

AN INDIVIDUAL STUDY PROJECT

by

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Project Advisor

U.S. Army War College  
Carlisle Barracks, Pennsylvania  
16 February 1988

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# ABSTRACT

AUTHOR: Charles E. Kittles, USAF

TITLE: Tactical Air Force Night/Adverse Weather Training

FORMAT: Individual Study Project

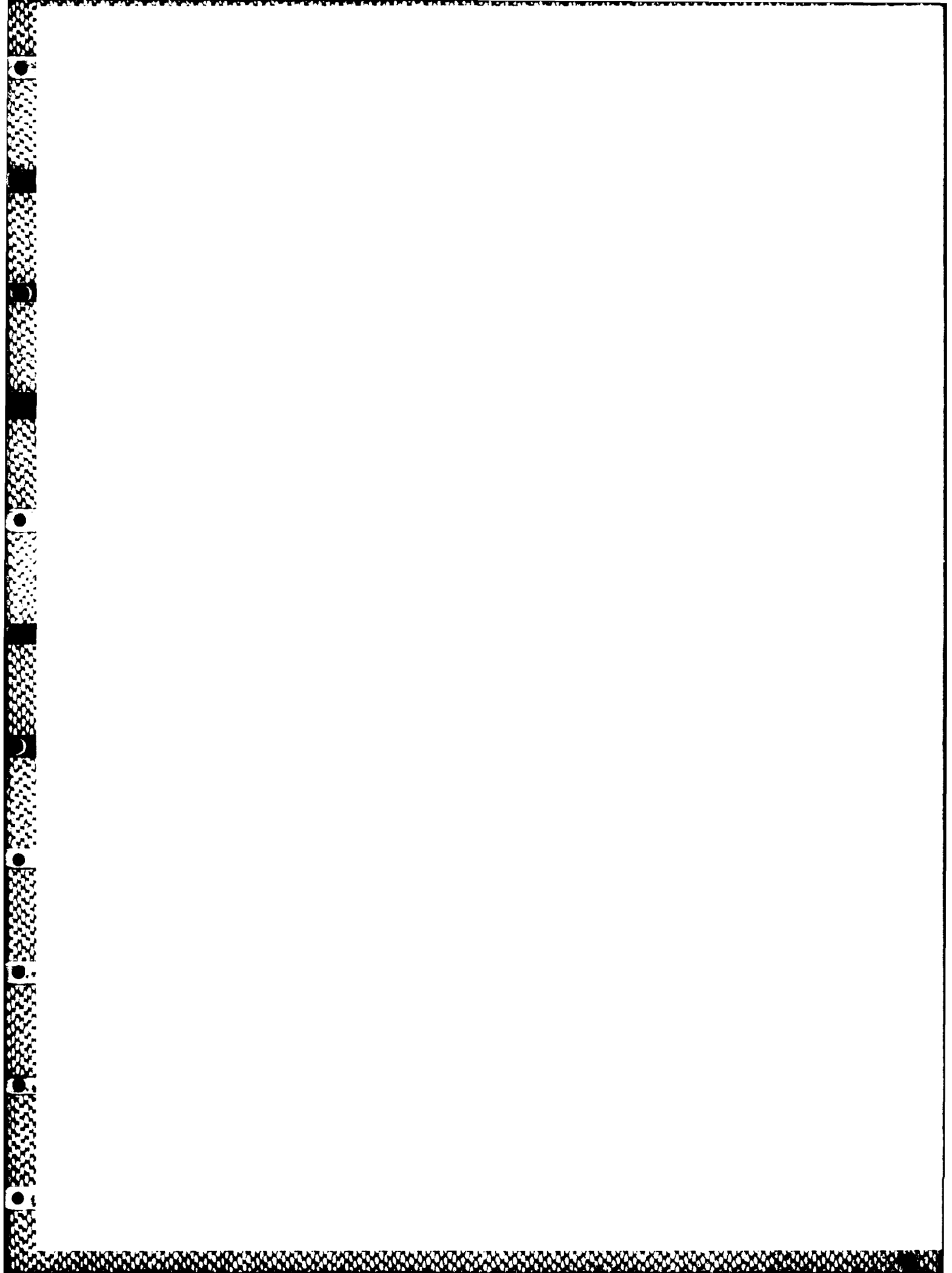
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Currently the United States military forces face adversaries that are committed to "around the clock" combat operations. The U.S. Air Force and U.S. Army have initiated joint programs to equip and train our forces to effectively combat the "threat". The U.S. Air Force and U.S. Army have not fully met that challenge. This study seeks to examine the U.S. Air Force commitment to that challenge. Following a threat statement, a historical review of selected fighter mishaps will set the stage for a brief look at "lessons learned" from these mishaps. Previous studies on night tactical warfare and the Low Altitude Navigation and Targeting Infrared for Night (LANTIRN) system will provide additional background data for identification and discussion of unresolved issues. The draft concept of training (COT) documents for the LANTIRN equipped F-16C/D and F-15E will also be reviewed prior to a discussion of both old and new issues. Recommendations and conclusions regarding the U.S. Air Force commitment to counter the threat -- day or night -- conclude this study.

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# TACTICAL AIR FORCES NIGHT/ADVERSE WEATHER TRAINING

## CHAPTER I

### INTRODUCTION

The experiences of World War II and, more recently, Afghanistan have shown that our enemies fully intend to use the cover of darkness to refuel, re-arm, and re-position for the next day's battle.<sup>1</sup> Disrupting these battlefield resupply efforts is a key responsibility of tactical aviation in support of the ground battle. However, the historical results of our efforts have not been encouraging.<sup>2</sup>

### THE THREAT

The worst case scenario is Central Europe, where the threat posed by enemy defenses and weather is most formidable. The doctrine, hardware, and training of potential adversaries in the region clearly demonstrate their intent to fight around the clock.<sup>3</sup> The warfighting "might" of both land and air threats is routinely exercised by Warsaw Pact forces during training operations in Eastern Europe. All of this evidence leaves little doubt that the enemy will commit to continuous, 24 hours per day operations.

Accordingly, United States force commanders need a 24-hour operational capability. Developments over the past decade now offer tactical aviation proponents the means to realize such a potential. High resolution radar, infrared systems such as Low Altitude Navigation and Targeting Infrared for Night (LANTIRN)

and PAVE TACK, and highly accurate inertial navigation systems coupled with digital weapons delivery computers signal a possible end to the sanctuary previously afforded an enemy by darkness and inclement weather.<sup>4</sup>

However, we face serious hardware and training constraints in our current capability to conduct ground attack operations in conditions other than those of day, visual flight rules (VFR). The only credible force is provided by a small number of PAVE TACK equipped F-111F's and soon-to-be-fielded Low Altitude Night Attack (LANA) equipped A-7's.<sup>5</sup> Other United States Air Force (USAF) tactical aircraft can only use flares for night attack; these are generally ineffective and completely unacceptable for high threat areas such as Central Europe, where high speed and low altitude performance are needed to penetrate defended areas.

The USAF is planning to equip both the F-16C/D and F-15E with LANTIRN, a decision fully warranted by our current inability to effectively counter the 24-hour threat. This enormous investment includes 700 LANTIRN pod sets to be externally mounted in a twin pod configuration on 392 F-15E's and 300 Block 40/42 F-16C/D's. The first operational capability is planned for late 1989.<sup>6</sup>

#### A DILEMMA

Personnel in the Tactical Air Forces (TAF) generally recognize that aircrews are already approaching task saturation without the additional work load LANTIRN will impose.<sup>7</sup> Both senior commanders and crewmen alike are keenly aware that present operational and training commitments are as much as the crews can handle.

Therefore, what combat capability must be eliminated in order to make room for LANTIRN? None, I hope!

The present workload, along with a history of night and weather related aircraft mishaps, has raised serious questions concerning the night capabilities of the TAF. Several of the better "objective look" studies on LANTIRN and night tactical warfare have plowed much of the ground in addressing the more serious questions raised.<sup>8</sup> This study will not retrace their efforts. However, we must ask whether the USAF is committed to a 24-hour per day operation? To take full advantage of the sortie rates our newest fighters can produce, the operating envelope must be expanded, particularly during the European winter months. Currently our day-only fighters are very limited in winter months, generating fewer than two productive sorties per day. In contrast, night capable F-16C/D and F-15E fighters could fly four to six sorties per 24-hour period.<sup>9</sup>

The purpose of this paper is to evaluate the USAF's dedication to that commitment. A brief historical review will ultimately address issues and questions raised by past studies and proposed concepts of training (COT) for the LANTIRN equipped F-16C/Ds and the F-15Es. My conclusions are truly my own. They will reflect the views of a pilot who has taken the time to study and reflect on TAF potential to make decisive contributions to ground operations under 24-hour, all-weather conditions. Finally, this paper is intended for readers experienced in, and highly familiar with, modern tactical fighters and their associated training programs.

## ENDNOTES

1. U.S. Department of the Air Force, Directorate of Operations/Tactical Division (XOOTT), Why Tacair at Night?, p. 5.
2. Henry Zebel, LTC (ret), USAF, "Truck Count", Air University Review, January - February 1983, pp. 36-44.
3. Headquarters Tactical Air Command, Directorate of Requirements/Systems Management Organization (SMO-L), Why Night, Why LANTIRN?, p. 7.
4. Ibid., p. 9.
5. U.S. Department of the Air Force, Directorate of Operations/Tactical Division (XOOTT). Point Paper on Operational Training in the 1990's.
6. Ibid.
7. David G. Blair, LTC, LANTIRN Operational Training for the F-15E and F-16C/D, pp. 21-22.
8. David G. Blair, LTC, LANTIRN Operational Training for the F-15E and F-16C/D, and Michael E. Heenan, LTC, USAF Night Tactical Warfare for the 1990's.
9. XOOTT, Why TACAIR at NIGHT?, p. 5.

## CHAPTER II

### HISTORICAL LOOK

First, I will review selected night and weather related mishaps of the 1980's. This review will set the stage for discussing past, present and future training issues.

#### F-16 MISHAPS

For the sake of brevity, only F-16 mishaps will be reviewed. F-15 pilots are not tasked in the low-altitude high threat air-to-surface tactical environment. Neither aircraft has a LANTIRN "type" mission. However, the primary mission flown by F-16 pilots offer grounds for comparison.

Since the early 1980's a deficiency has existed in the capability to adequately simulate meteorological conditions in the F-16 flying training programs. Therefore, instrument flying training has lacked the realism that leads to precise aircraft control and navigation required under actual meteorological or night conditions. This resulted in the F-16 fleet experiencing twelve major (Class A) accidents in which weather or darkness played a role.<sup>1</sup> The accidents represent only 16 per cent of the total F-16 Class A accidents that occurred during this period. However, they resulted in a number of flying training program changes and identification of the need for a vision restriction device (VRD). Specific accident examples are:

- aircraft flew into the ground during night letdown onto the gunnery range for weapons deliveries. Attention channelized to radar scope.

- student pilot crashed from unusual attitude while attention was focused on some warning and caution lights.
- aircraft impacted the ground following entry into instrument meteorological conditions (IMC); pilot had reported he "had a problem" and was returning to base. Aircraft impacted in a steep dive at high airspeed apparently in controlled flight.
- aircraft struck an instrument landing system antenna during an approach to home station. Pilot did not monitor descent rate while concentrating attention on outside visual reference.
- following a weather-aborted low-level mission, the pilot allowed an insidious descent rate to develop resulting in an 3800-foot loss of altitude and impact with the water.
- aircraft collided with the ground at night while maneuvering against ground lights mistakenly identified as the target aircraft at 18,000 feet.
- during a formation departure in IMC the flight lead experienced vertigo and entered an unusual attitude. Lead aircraft hit the trees during recovery and the wingman impacted the ground.
- subsequent to a normal recovery from a night visual weapons delivery pattern the aircraft impacted the ground.
- during a trail departure into IMC the mishap pilot reported loss of radar contact with lead. Shortly thereafter, the mishap aircraft impacted the ground.
- during a night instrument approach, in the weather, the mishap pilot became disoriented and attempted to go around but hit the ground and was fatally injured.
- during a night instrument approach, in the weather, the mishap pilot became spatially disoriented and attempted to orient the aircraft to a false horizon. The aircraft impacted the ground.

The above aircraft mishaps occurred across the full spectrum of tactical aviation. Accidents occurred during formation take-offs, air-to-surface bombing missions, and air-to-air intercepts. They also include several instances of distraction or disorientation.

during single aircraft recoveries. The pilots involved in these mishaps range in experience level from very inexperienced lieutenants to the most experienced lieutenant colonels. For the most part, the only similarity between the mishaps was they all involved either adverse weather or night conditions -- or both.

Human physiology, aircraft system design and external environmental conditions normally play a role in all aircraft mishaps.<sup>2</sup> However, these three elements are for the most part "givens". Pilots must learn to deal with their own physiology and all types of weather. Changes to aircraft systems design is a slow and tedious process and at times is only marginally effective. The most effective, yet "tactically sound", form of mishap prevention is high-quality, realistic training programs based on the threat.<sup>3</sup>

#### LESSONS LEARNED

Numerous lessons were learned as a direct result of these fighter aircraft night and weather related mishaps of the 1980's. Recommendations included both academic and flight program changes as well as a renewed emphasis on basic instrument flight. This emphasis was used to modify and improve both the formal schoolhouse and operational flying training programs.<sup>4</sup> The program experiencing the majority of restructuring was the F-16 "B" course syllabus, which is used to train inexperienced pilots attending F-16 schoolhouse flight training prior to being assigned to operational units. The major changes to the F-16 "B" course syllabus are listed in chronological order:



- March 1980
  - Little emphasis on instrument procedures (only two instrument sorties)
  - Heavy on aircraft handling/formation training
  - Heads up display (HUD) academics technical in nature
  - Few HUD-off instrument recoveries
  - No simulator
  - Instrument Refresher Course (IRC) needed improvement
- March 1981
  - Little change in syllabus training
  - IRC improved
- June 1982
  - Emphasis shifted
  - Instrument recovery/approach added throughout syllabus
- December 1982
  - Third instrument sortie added to syllabus
  - Simulator added -- emphasis on emergency procedures
- January 1984
  - Simulator training restructured -- instrument emphasis increased
  - Night/IMC emphasis increased
- May 1984
  - Added fourth instrument sortie
  - Two rear cockpit instrument sorties added
- June 1985
  - HUD-off instrument departure added
- July 1986
  - Increased instrument ground training
  - HUD-off flying training increased

The July 1986 syllabus change signaled the achievement of a six year program modification based on lessons learned from past mishaps. The result of these changes was a much improved tactical, instrument and night flying training program. The F-16 "TX" course syllabus, designed for experienced pilots, was similarly restructured during the same period.

#### ENDNOTES

1. Headquarters Tactical Air Command, Directorate of Safety, A Summary of Falcon Mishaps, 1 July 1987, pp. 1-8.

2. Interview with William Barber, Major, Tactical Air Command Flight Safety, Langley AFB, 23 November 1987.

3. David G. Blair, LTC, LANTIRN Operational Training for The F-15E and F-16C/D, pp. xi-xii.

4. Headquarters Tactical Air Command, Directorate of Training, Historical Summary of Instrument Training Improvements in F-16 B/TX Syllabi, 22 January 1987.

## CHAPTER III

### EARLY STUDIES/ISSUES

Numerous studies dealing with adverse weather/tactical night flying have addressed many pertinent and complicated issues. For background purposes the author will review selected portions of two characteristic research papers written by students at Air University.

#### OPERATIONAL TRAINING

The first study, LANTIRN Operational Training For the F-15E and F-16C/D, had three specific objectives: first, it developed a master operational training program for LANTIRN-equipped F-16C/Ds and F-15Es based on realistic training. second, it determined what operational and support assets would be most affected by the introduction of LANTIRN-equipped aircraft into the TAF. Finally, it served as an outline for development of continuation (operational) training programs for LANTIRN-equipped aircraft.

The author of the study approached his task primarily from the F-16 point of view. As a previously qualified F-16A/B pilot, that's where his expertise lay. The author asserted that "the F-15E training program would resemble the F-16C/D program in almost every respect". While the two aircraft are radically different in performance, crew size, and avionics capabilities, historical sortie planning factors tended to support that theory.<sup>1</sup>

Two recurring themes were evident throughout the study: the need for realistic training programs and the prioritization of

mission roles.<sup>2</sup> The author expressed his concern over the lack of concrete LANTIRN employment doctrine and the need to prioritize mission roles:

Such multirole aircraft as the F-16 and F-15E can easily attack a ground target with a wide variety of weapons and then swing to the air supremacy role with performance approached by only a limited number of other aircraft. The capabilities of the F-16C/D are numerous and pilots are introduced to its many roles during initial training. Maintaining a combat level of readiness in all the possible roles the aircraft can perform is not possible -- prioritization of the roles is necessary. Current training guidance for multirole<sup>3</sup> fighter aircraft recognizes this problem.

To insure realistic training, no loss of combat capability, and the proper prioritization of mission roles, the author proposed a continuation training program that reflected a 37 per cent increase in sorties over current training programs. The proposed training program did not consider support availability, costs, nor did it propose a plan of employment.<sup>4</sup>

#### NIGHT TACTICAL WARFARE

The second paper, USAF Night Tactical Warfare Training for the 1990's, was written solely to address questions developed by Headquarters, Air Force (AF/XOOTT). A number of specific questions were posed:

Should we have "Night Fighter Squadrons"? If so, what should the mix be of day versus night? Is today's experience level high enough to handle both day and night low level attack? Is the crew ratio high enough for a tactical fighter squadron to operate and fight 24 hours per day?<sup>5</sup>

The continuation training program recommended in this study called for a total sortie count that compared favorably with training programs in use at that time. On the other hand, the author's program required a substantial increase in total night sorties with a proportionate reduction in day sorties.<sup>6</sup>

Both authors believed the training programs resulting from their studies would be suitable for all LANTIRN-equipped fighter aircraft.<sup>7</sup> But, the A-10 is no longer programmed to be equipped with LANTIRN and the F-16C/D and the F-15E COTs bear little resemblance to the COTs reviewed by these pilots. Thus several issues addressed in both studies have changed significantly. Those issues will be identified by an asterisk when discussed with new issues under "recommendations".

#### ENDNOTES

1. David G. Blair, LTC, LANTIRN Operational Training for the F-15E and the F-16C/D, p. 60.

2. Ibid., p. 17.

3. Ibid., p. 17.

4. Ibid., pp. 79-80.

5. Michael E. Heenan, LTC, USAF Night Tactical Warfare for the 1990's, p. 55.

6. Ibid., p. 67.

7. Blair, p. 60 and Heenan, pp. 65-69.

## CHAPTER IV

### LANTIRN CONCEPT OF TRAINING (COT)

The LANTIRN system provides the USAF's tactical air forces with a low-altitude, day or night, under the weather, air-to-ground capability. Since its conception in the early 1980's, the objective of the formal schoolhouse LANTIRN training program has been to deliver course graduates to operational units fully qualified in LANTIRN operations. They need only local orientation prior to mission ready status.<sup>1</sup> However, over this same period both the F-16C/D and F-15E COT have been extensively modified as a result of program changes. First, I will review the F-16C/D program and the draft revision of LANTIRN COT. Then I will review the F-15E program. I will discuss only major changes which could significantly impact the USAF's ability to counter the threat.

#### F16C/D

Initially the LANTIRN equipped F-16C/D was envisioned as a fully mission capable F-16C/D with enhanced night, below the weather, low-altitude capabilities.<sup>2</sup> This has not changed. However, the recent draft revision of the LANTIRN COT reflects numerous changes and additions resulting from program updates. As a new weapons system matures and flight test data is accumulated, revisions to the COT result. This on-going learning process is natural and results in a much improved product -- in this case, a more highly trained F-16 pilot.

The current F-16C/D LANTIRN concept of training strategy is based on an Instructional Systems Development (ISD) program. The instruction will be developed as three formal top-off training courses offered in eight entry level tracks, which are based on the experience level of the pilot entering the program.<sup>3</sup> This approach to LANTIRN training is based on the concept that pilots should be sent to their units fully qualified in LANTIRN or return to the formal schoolhouse at Luke AFB for LANTIRN top-off training after they meet specific entry level requirements. The LANTIRN COT authors believe the schoolhouse is the safest, most efficient place to train the LANTIRN mission because it has:

- The best training environment with dedicated instructors.
- A better aircraft mix for training purposes: 7C (single-seat)/17D (two-seat) models vs 22C/2D models at operational units.
- A complete training program that covers academic, avionic and LANTIRN Part Task Trainers, and an F-16 Operational Flight Trainer with full mission integration capability.

Initially the F-16C/D LANTIRN schoolhouse graduate was to be sent to his operational unit qualified across the full spectrum of the LANTIRN mission. This concept resulted in high experience level criteria for pilots entering the formal training program as concerns from the operational commanders about program feasibility surfaced.

As test data was gathered through developmental test and engineering (DT&E) flights and initial operational test and evaluation (IOT&E) flights, it became apparent that program modifications would be required. Those flights identified workload requirements for the single-pilot in the night below the weather,

low altitude, environment that would require a graduated combat capability (GCC) training program based on experience level. Further, in an attempt to validate entry level experience requirements, two inexperienced lieutenants were selected to receive academic instruction in LANTIRN, then each would fly eight F-16 LANTIRN missions.<sup>5</sup>

The test data and validation flights were instrumental in the program evolution, leading to the current draft revision of the LANTIRN COT. The operational training outline contained within the COT reflects a total six-month GCC sortie count (normal training period), identical to today's actual F-16 units with a primary tasking of surface attack.<sup>6</sup> Surprisingly, there is no increase in GCC training sorties, per half, especially in view of the 37% increase recommended by one of the early studies. However, there is a different mix between the air-surface (A/S) and air-to-air (A/A) sorties plus a significant increase in night training sorties. The recommended sortie mix for LANTIRN equipped F-16C/Ds will be 70/30 A/S - A/A versus today's F-16 units that fly 60/40 A/S - A/A. Approximately 40% of the proposed A/S training will be "night" LANTIRN training, as opposed to today's night A/S training of less than 10%.<sup>7</sup>

#### F-15E

From day one the anticipated role for the F-15E has been all weather deep penetration and under-the-weather/night air-to-surface attack/strike using guided and free fall weapons.<sup>8</sup> The



F-15E secondary mission is all weather air defense. Both the mission statements and concept of employment of the F-15E are significantly different from those of the LANTIRN-equipped F-16C/D.

Not all F-16C/Ds will be equipped with LANTIRN; therefore, the LANTIRN capability is viewed as an increased capability which will be taught as a top-off program once initial F-16C/D training is complete. On the other hand, all F-15Es will be equipped with LANTIRN, so that capability and training is considered baseline to the aircraft. Contrary to early expectations the differences in aircraft performance, crew size and avionic capabilities has led to different mission statements and resulting COTs.

The F-15E training strategy is also based on the ISD concept. The purpose of F-15E formal training is to provide qualified aircrews for F-15E operational units worldwide. Students will be taught systems knowledge through academics, acquisition/practice of skills using Aircrew Training Devices (ATD's) and demonstration of skill proficiency in the aircraft.<sup>9</sup>

However, we should note a major difference between the F-15E formal schoolhouse training program and previous Tactical Air Command (TAC) schoolhouse programs in the number of aircraft assigned to training units. Past TAC programs used a minimum of 25% of the total aircraft fleet as training assets. In the case of the F-15E, that number has been reduced to 12.5% of the total fleet.<sup>10</sup> Fewer F-15s assigned to training units translates to fewer schoolhouse training sorties to train aircrews. Fewer sorties per aircrew at the schoolhouse shifts a major part of the training burden to operational units.

ENDNOTES

1. U.S Department of the Air Force, Directorate of Operations/Tactical Division (XCOTT), Point Paper on LANTIRN Training, 7 August 1987.

2. Headquarter Tactical Air Command, Directorate of Requirements/Systems Management Organization (SMO-L). Point Paper on LANTIRN Program, 23 November 1987.

3. Headquarter Tactical Air Command, Directorate of Training, Draft Revision of LANTIRN Concept of Training, 12 November 1987, pp. 1-5.

4. Ibid.

5. Interview with Brian McLean, Major, Tactical Air Command, Directorate of Requirements/Systems Management Organization (SMO-L), 23 November 1987.

6. Draft Revision of LANTIRN Concept of Training, p. A-1.

7. Ibid., p. A-2.

8. U.S. Department of the Air Force, Directorate of Operations/Tactical Division (XCOTT), Point Paper on F-15 Strike Eagle, 6 August 1987.

9. Headquarter Tactical Air Command, Directorate of Training, Draft Revision of F-15E Concept of Training, 5 November 1987, p. 1.

10. Ibid., p. 3.

## CHAPTER V

### RECOMMENDATIONS

The questions listed below lead to recommendations based on the material and considerations previously discussed. Questions annotated with an asterisk have been addressed by previous studies.

1. Should We Have LANTIRN Night Fighter Squadrons?\*

No! The USAF cannot afford LANTIRN "night only" fighter squadrons. To limit LANTIRN-equipped aircraft to night only operations would severely limit LANTIRN's primary benefit; expanding the employment window to include operations during night-time and poor weather.

In the past the night fighter squadron concept evolved out of necessity. Limited aircraft capability required highly specialized training and operations to allow aircrews a reasonable chance of mission accomplishment. This is not the case with the LANTIRN system which was designed as an enhancement to existing aircraft capabilities. The LANTIRN system will compliment and expand both the F-16C/D and F-15E aircraft capability and does not require totally specialized training. Therefore, new systems such as LANTIRN which provide the United States Air Force's tactical air force with a low-altitude, day or night, under the weather, air-to-ground capability can be available to counter a 24 hour per day threat. Both the F-15E and the LANTIRN-equipped F-16C/D must be utilized to expand both the day and night operating envelopes.

2. Should the TAF Train all Pilots or Aircrews for both Day and Night?

Both day and night training should be based on pilot/aircraft capabilities and the threat. Currently the TAF is not well-equipped to fight the Air War at night.<sup>1</sup> The only credible force for high-threat night operation is ten F-111 squadrons, only four of which are equipped with PAVE TACK.<sup>2</sup> At night, without PAVE TACK, the F-111's can effectively kill only large, fixed, radar-significant targets. Moreover, both the PAVE TACK and non-PAVE TACK missions are demanding and require considerable night training. On the other hand, the remaining TAF squadrons have limited night attack capabilities and are restricted to low-threat, medium altitude tactics using target illumination.

Should non F-111 squadrons with this very "limited" night attack capability be required to train for night low-threat conflict? Not if night high-threat tactics will be required to defeat the threat in their theater of responsibility!

This "limited" night exposure tends to foster a general feeling of frustration and apathy concerning night flying, which can lead to a lack of mission preparation and possible disastrous results! The adage of "Train the way you're going to fight" has never been more applicable. If the aircraft and weapons systems are not designed to allow the pilot to fly in an environment where the threat can be effectively countered, then use a system that will -- LANTIRN!

Until the LANTIRN/LANA systems become operational, those squadrons described above as "limited" in the night arena should

not be required to fly night missions which are not tactically sound for their theater of responsibility.

3. Can A Tactical Fighter Squadron Fight 24 Hours a Day?\*

Based on current employment concepts and maintenance generation capabilities for modern state-of-the-art aircraft, the answer is emphatically no! Studies continue to show that pilot or crew availability is normally the limiting factor for 24-hour operations, given adequate spare parts, munitions and maintenance/logistics personnel to support the aircraft.<sup>3</sup>

However, during European winter months the pilot or aircrew is not the "weak link". The operational envelope -- daylight hours and VFR weather -- clearly can be more restrictive in the European theater, than pilot or aircrew availability. Once again the need to expand this envelope cannot be over emphasized.

A typical fighter squadron's operational envelope could be expanded from five hours per day, in day VFR conditions to fourteen to sixteen hours per day with a day or night, low-altitude, under the weather, air-to-ground system like LANTIRN.<sup>4</sup>

4. Does Headquarters USAF Need to Publish LANTIRN Specific Doctrine?

No! The Air Staff publishes basic doctrine (AFM 1-1) and operational doctrine (AFM 2-1) which states the USAF's most fundamental and enduring beliefs and applies these principles to military action.<sup>5</sup> Tactical doctrine (AFM 3-1) describes the proper use of specific weapons systems to accomplish detailed objectives. On the other hand, tactics, techniques, and procedures -- such as LANTIRN specifics -- belong in the MAJCOM 3-series manuals or suitable substitutes.

The F-16 LANTIRN Concept of Employment manual is a TAF coordinated document which is in the final stages of publication.<sup>6</sup> It contains tactics, techniques, and procedures for F-16C/D LANTIRN operations. The F-15E publication is in the formulation stage.

In addition, all four U.S. military services have approved the Joint Night/Adverse Weather Combat Operations Manual (J-NIGHT), which will be published and distributed in the near future. Sections of J-NIGHT contain tactics, techniques, procedures, and doctrine for both LANTIRN and LANA equipped aircraft.

5. Can the USAF Achieve Effective "Night" LANTIRN TRAINING?

Tactical Air Command (TAC) will begin F-15E flight training in October of this year in the 405 Tactical Training Wing (TTW) at Luke AFB; the first F-16C/D class is scheduled for November 1989 in the 58 TTW, also located at Luke AFB, Arizona.<sup>8</sup> As we noted in the preceding chapter, approximately 40 per cent of the air-to-surface training for both the F-15 and F-16C/D will be accomplished at "night". TAC's goal is to accomplish 50 per cent of "night" LANTIRN training during daylight hours by employing a vision restriction device (VRD).<sup>9</sup>

Why? This dramatic increase in night operations, both at the schoolhouse and operational training units, will require additional support in a number of areas. Major areas of concern include:<sup>10</sup>

- Gunnery ranges must be equipped with low-cost Thermal Infrared (IR) targets for use with LANTIRN.
- Low level routes must be surveyed and cleared for night use

- LANTIRN capability is significantly degraded using current 1000' above ground level (AGL) minimums.
- Ranges and low-level route structures which permit night and/or laser operations are limited, particularly in overseas commands.
- Increased night operations will require additional support from air traffic control/Federal Aviation Administration well beyond current requirement.
- Current TAF policy and directives concerning TAF base quiet hours must be re-evaluated -- TAC's guidelines prohibit take-off, after 2200 hours local.

These concerns have been assigned to offices of primary responsibility (OPRs) at TAC. However, the complexity of the issues alone precludes a solution in the near future.

Current plans call for a night flying requirement as high as 30 to 35 per cent of the total flying requirement for LANTIRN designated squadrons.<sup>11</sup> Assuming a three squadron wing, this equates to a full squadron's flying done at night, every night. The impact on quality of life for USAF members and the environmental impact/noise complaints for the surrounding communities make this unfeasible.

The VRD appears to be the best alternative. In theory, it will adequately simulate the true night environment. However, at present, the final form of a LANTIRN VRD will not be available to meet TAC's ready for training date. Contractors are having difficulty fielding a system that satisfies all the operational, logistical, and safety requirements prior to the beginning of F-15E LANTIRN training.

Obviously there will have to be "work around" considering current environmental restrictions and delays in VRD acquisition.

Possible solutions must include waivers to TAF base quiet hour policies and accelerated solutions to the major gunnery range and low level issues. In addition, operational units may need to shift portions of night/weather training or deploy to other bases with more favorable training conditions.

The TAF can have an effective "night" training program; however, a dilution of the planned COTs is not a viable option.

6. Is the Concept of Training for the F-15E and the LANTIRN Concept of Training for the F-16C/D Adequate?

The political realities of flying hour costs, procurement costs, and constrained training resources has required policy makers and "trainers" to make some hard decisions. A fifty per cent reduction in training coded (TF) F-15Es resulted in major schoolhouse sortie cuts in the F-15E training program.<sup>12</sup> Both the schoolhouse and operational units will be affected. Creative training programs that rely on the use of computer based instruction, part task trainers, and extensive simulator training have been designed to fill the void. Time will tell!

Both COTs contain detailed operational training outlines based on graduated combat capability with mission roles prioritized according to mission statements. Further, the emphasis on quality night training represents a concerted effort to incorporate past lessons while preserving realistic training.

The issues have been addressed and incorporated into well thought out training outlines. Fiscal reductions have obviously had an impact, but the resources are still available to effectively train TAF pilots and aircrews. The quick resolution of the issues/



concerns addressed in question number 5 of the study will be the determining factor concerning the quality of pilot or aircrew produced by either or both COT's.

#### ENDNOTES

1. U.S. Department of the Air Force, Directorate of Operations/Tactical Division (XOOTT), Why TACAIR at Night?, p. 7.

2. Ibid.

3. Ibid., p. 5.

4. Interviews with Brian McLean, Major, Systems Management Organization (SMO-L), Langley AFB, 23 November 1987 and Gary D. Robinson, LTC, Tactical Division (XOOTT), Pentagon, 10 December 1987.

5. U.S. Department of the Air Force, Basic Aerospace Doctrine (AFM 1-1), pp. v-vi.

6. Interview with Brian McLean, Major, Systems Management Organization (SMO-L), Langley AFB, 23 November 1987.

7. Headquarters Tactical Air Command, Directorate of Joint Matters/Air Land Programs Office (XPJA), Joint Night/Adverse Weather Combat Operations Manual, p. 17.

8. U.S. Department of the Air Force, Directorate of Operations/Tactical Division (XOOTT), Point Paper on LANTIRN Training, 7 August 1987.

9. Ibid.

10. Ibid.

11. Headquarters Tactical Air Command, Directorate of Requirement/Systems Management Organization (SMO-L), Point Paper on LANTIRN Vision Restriction Device, 19 January 1988.

12. Tactical Division (XOOTT), Point Paper on F-15 Strike Eagle, 6 August 1987.

## CHAPTER VI

### CONCLUSION

United States Air Force Doctrine stresses the inherent capability that air power adds to the achievement of military victory.

The character of Aerospace forces and the Aerospace environment provide the potential to exploit certain fundamental combat capabilities which can significantly enhance the effect and influence of military actions.<sup>1</sup>

Currently the ability of the USAF to "enhance the effect and influence of military actions" in other than day VFR conditions is seriously constrained. The modernization of the USAF tactical force structure with new systems such as LANTIRN and LANA can change this.

The paper has addressed a number of issues and concerns. The recommendations assume that compromises and "work arounds" will be required prior to the resolution of most issues. However, combat capability must be preserved. The best way to do this is through quality realistic training programs. The overriding question can now be answered: The USAF is committed to a 24 hour per day operation.

The introduction of LANTIRN-equipped F-16C/Ds and F-15Es in addition to A-7 LANA represents an enormous commitment of USAF personnel and weapons systems to the elimination of the night/adverse weather void that currently exists for fighter operations. New weapons systems, quality training programs, and a sizeable investment in joint programs and initiatives clearly demonstrate

the USAF's commitment to train for and be capable of destroying any threat -- 24 hour per day.

#### ENDNOTES

1. U.S. Department of the Air Force, Basic Aerospace Doctrine (AFM 1-1), pp. 2-3.

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3. Heenan, Michael E., LTC. USAF Night Tactical Warfare Training for the 1990s. Symposium paper. Maxwell Air Force Base: Air War College, April 1984.
4. Headquarters Tactical Air Command, Directorate of Safety. A Summary of Falcon Mishaps. Langley AFB, Va: 1 July 1987.
5. Headquarters Tactical Air Command, Directorate of Training. Draft Revision of F-15E Concept of Training. Langley AFB, Va: 5 November 1987.
6. Headquarters Tactical Air Command, Directorate of Training. Historical Summary of Instrument Training Improvements in F-16 B/TX Syllabi. Langley AFB, Va: 22 January 1987.
7. Headquarters Tactical Air Command, Directorate of Joint Matters. Joint Night/Adverse Weather Combat Operations Manual. Langley AFB, Va: 7 January 1988.
8. Headquarters Tactical Air Command, Directorate of Requirements/Systems Management Organization. Point Paper on LANTIRN. Langley AFB, Va: 23 November 1987.
9. Headquarters Tactical Air Command, Directorate of Training. Draft Revision of LANTIRN Concept of Training. Langley AFB, Va: 12 November 1987.
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12. McLean, Brian, Major, USAF, Tactical Air Command System Management Organization. Personal Interview. Langley AFB, Va: 23 November 1987.

13. Robinson, Gary D., LTC, USAF, Headquarters Air Force Directorate of Operations. Personal Interview. Pentagon: 10 November 1987.

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15. U.S. Department of the Air Force, Directorate of Operations/Tactical Division. Point Paper on F-15 Strike Eagle. Pentagon: 6 August 1987.

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